

Amendments to the Claims

1. (Currently amended) A method of compensating mask/reticle data for lithographic process distortions, comprising the acts of:

reading a ~~[[first]]~~ set of mask/reticle data that defines at least one feature to be created lithographically;

performing an etch simulation of ~~[[the]]~~ etch effects that would occur if a wafer is ~~[[created]]~~ exposed using a mask/reticle corresponding to the ~~[[first]]~~ set of mask/reticle data and etched with an etch process;

using ~~[[the]]~~ results of the etch simulation to produce an etch-compensated set of mask/reticle data that are compensated for the etch effects ~~create a second compensate features within the set of mask/reticle data that defines at least one new or modified feature to be created lithographically~~; and

performing optical process correction (OPC) to produce a set of OPC-corrected mask/reticle data that compensate for optical/resist process distortions using the ~~second~~ etch-compensated set of mask/reticle data as an input ~~to create a third set of mask/reticle data~~.

2. (Currently amended) The method of Claim 1, comprising ~~[[the]]~~ an additional act of exporting the ~~[[third]]~~ OPC-corrected set of mask/reticle data to a mask/reticle writer to manufacture a corresponding mask/reticle.

3. (Previously presented) The method of Claim 1, in which the act of performing a simulation includes accessing a set of predetermined rules for the etch process.

4. (Previously presented) The method of Claim 1, in which the act of performing a simulation includes accessing a table of predetermined values for the etch process.

5. (Currently amended) A method of compensating mask/reticle data for

lithographic process distortions, comprising the acts of:

reading a [[first]] set of mask/reticle data that defines at least one feature to be created

lithographically;

performing an etch simulation of [[the]] etch effects that would occur if a wafer is

[[created]] exposed using a mask/reticle corresponding to the [[first]] set of mask/reticle data and
etched with an etch process;

calculating etch biases from results of the etch simulation [[result]]; and

applying [[the]] previously calculated etch biases within [[an]] a model-based optical
process correction (OPC) loop that adjusts the mask/reticle data for optical/resist process
distortions.

6. (Previously presented) The method of Claim 5, in which the act of performing a
simulation includes accessing a set of predetermined rules for the etch process.

7. (Previously presented) The method of Claim 5, in which the act of performing a
simulation includes accessing a table of predetermined values for the etch process.

8. (Currently amended) A computer-readable media having a sequence of programmed
instructions stored thereon that when executed by a computer causes the computer to perform the
acts of:

reading a [[first]] set of mask/reticle data that defines at least one feature to be created

lithographically;

performing an etch simulation of [[the]] etch effects that would occur if a wafer is

[created] exposed using a mask/reticle corresponding to the [[first]] set of mask/reticle data and
etched with an etch process and;

using the results of the etch simulation to produce an etch-compensated set of mask/reticle data that are compensated for the etch effects ~~create a second set of mask/reticle data that defines at least one new or modified feature to be created lithographically;~~ and performing optical process correction (OPC) to produce a set of OPC-corrected mask/reticle data that compensate for optical/resist process distortions using the etch-compensated ~~on the second~~ set of mask/reticle data as an input.

9. (Currently amended) The computer-readable media of Claim 8, wherein the sequence of programmed instructions causes the computer to export OPC-corrected mask/reticle data to a mask/reticle writer to manufacture a corresponding mask/reticle.

10. (Previously presented) The computer readable media of Claim 8, in which the act of performing a simulation includes accessing a set of predetermined rules for the etch process.

11. (Previously presented) The computer readable media of Claim 8, in which the act of performing a simulation includes accessing a table of predetermined values for the etch process.

12. (Currently amended) A computer readable media having a sequence of programmed instructions stored thereon that when executed by a computer causes the computer to perform the acts of:

reading a [[first]] set of mask/reticle data that defines at least one feature to be created lithographically;

performing an etch simulation of etch effects that would occur if a wafer is [[created]] exposed with a mask/reticle corresponding to the [[first]] set of mask/reticle data and etched with an etch process;

calculating etch biases from results of the etch simulation; and

applying ~~[[the]]~~ previously calculated etch biases in ~~an~~ a model-based optical process correction (OPC) loop that adjusts the mask/reticle data for optical/resist process distortions.

13. (Previously presented) The computer readable media of Claim 12, in which the act of performing a simulation includes accessing a set of predetermined rules for the etch process.

14. (Previously presented) The computer readable media of Claim 12, in which the act of performing a simulation includes accessing a table of predetermined values for the etch process.

15 - 19 (Cancelled)

20. (Currently amended) A device that is formed on a wafer created by the acts of:
reading a ~~[[first]]~~ set of mask/reticle data that defines at least one feature to be created lithographically;

performing an etch simulation of ~~[the]~~ etch effects that would occur if a wafer is ~~[[created]]~~ exposed using a mask/reticle corresponding to the ~~[[first]]~~ set of mask/reticle data and etched with an etch process;

using ~~[[the]]~~ results of the etch simulation to produce an etch-compensated set of mask/reticle data that are compensated for the etch effects ~~create a second set of mask/reticle data that defines at least one new or modified feature to be created lithographically~~;

performing optical process correction (OPC) to produce OPC-corrected mask/reticle data that are compensated for optical/resist process distortions using the ~~[[second]]~~ etch-compensated set of mask/reticle data as an input ~~to create a third set of mask/reticle data~~;

exporting the ~~[[third]]~~ OPC-corrected set of mask/reticle data to a mask/reticle writer to manufacture a corresponding mask/reticle; and

using the mask/reticle to create the device on the wafer.

21. (Previously presented) The device of Claim 20, in which the act of performing a simulation includes accessing a set of predetermined rules for the etch process.

22. (Previously presented) The device of Claim 20, in which the act of performing a simulation includes accessing a table of predetermined values for the etch process.

23. (Currently amended) A device that is formed on a wafer created by the acts of:
reading a [[first]] set of mask/reticle data that defines at least one feature to be created lithographically;

performing an etch simulation of [[the]] etch effects that would occur if a wafer is [[created]] exposed using a mask/reticle corresponding to the [[first]] set of mask/reticle data and etched with an etch process;

calculating etch biases from results of the etch simulation [[result]];

applying [[the]] previously calculated etch biases within [[an]] a model-based optical process correction (OPC) loop that adjusts the mask/reticle data for optical/resist process distortions;

exporting the adjusted mask/reticle data to a mask/reticle writer to create a corresponding mask/reticle; and

using the mask/reticle to create the device on a wafer.

24. (Previously presented) The device of Claim 23, in which the act of performing a simulation includes accessing a set of predetermined rules for the etch process.

25. (Previously presented) The device of Claim 23, in which the act of performing a simulation includes accessing a table of predetermined values for the etch process.

26. (New) The method of Claim 1, wherein the etch simulation determines an increase in size of a feature that would be created on a wafer compared with a target feature size as a result of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding decrease in size.

27. (New) The method of Claim 1, wherein the etch simulation determines a decrease in size of a feature that would be created on a wafer compared with a target feature size as a result of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding increase in size.

28. (New) The computer readable media of Claim 8, wherein the instructions further cause the computer to determine an increase in size of a feature that would be created on a wafer compared with a target feature size as a result of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding decrease in size.

29. (New) The computer readable media of Claim 8, wherein the instructions further cause the computer to determine a decrease in size of a feature that would be created on a wafer compared with a target feature size as a result of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding increase in size.

30. (New) The method of Claim 5, wherein the etch simulation determines an increase in size of a feature that would be created on a wafer compared with a target feature size as a result of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding decrease in size.

31. (New) The method of Claim 5, wherein the etch simulation determines a decrease in size of a feature that would be created on a wafer compared with a target feature size as a result

of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding increase in size.

32. (New) The computer readable media of Claim 12, wherein the instructions further cause the computer to determine an increase in size of a feature that would be created on a wafer compared with a target feature size as a result of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding decrease in size.

33. (New) The computer readable media of Claim 12, wherein the instructions cause the computer to determine a decrease in size of a feature that would be created on a wafer compared with a target feature size as a result of the etch process and a corresponding feature in the etch-compensated set of mask/reticle data is biased with a corresponding increase in size.